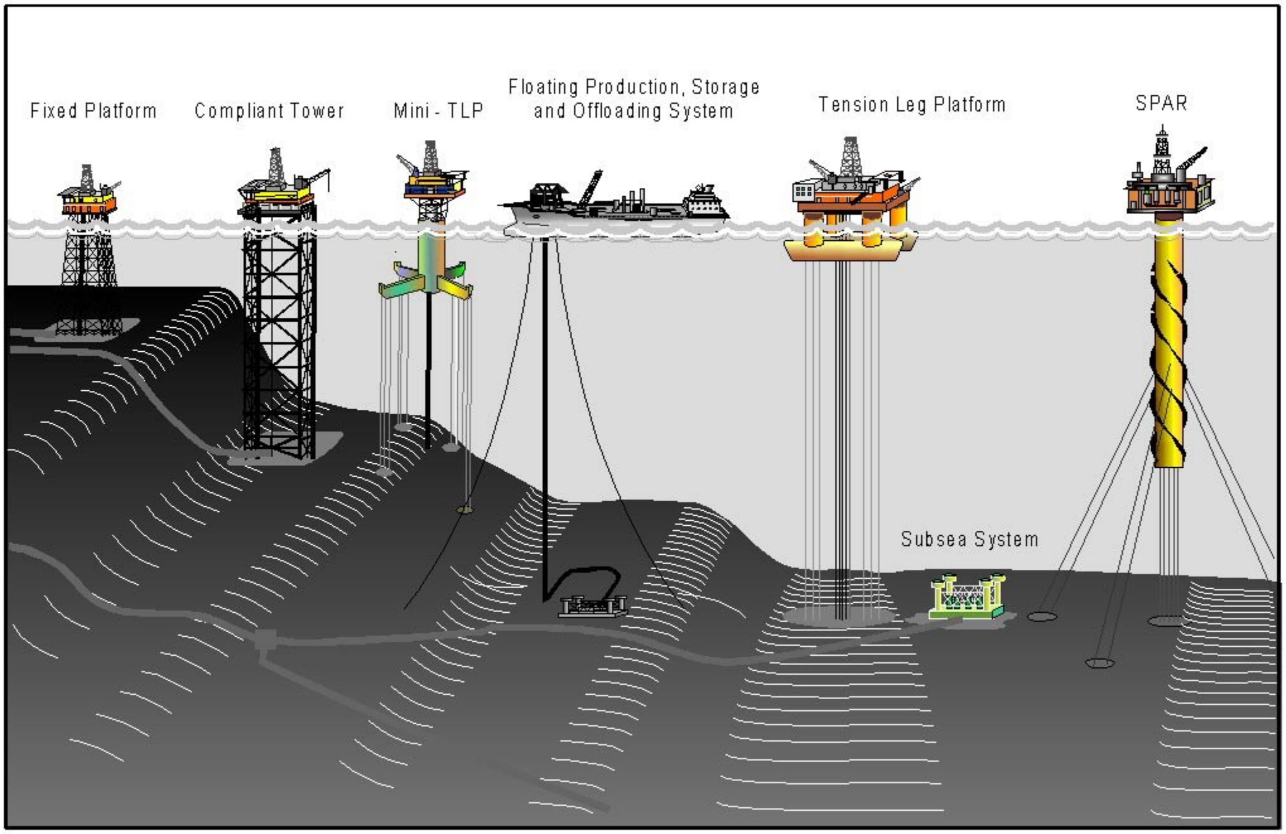
Appendices



Deepwater development systems

Source: Deepwater Gulf of Mexico: America's Emerging Frontier; Minerals Management Service, OCS Report MMS 2000-022, April 2000.

Appendix A
Workshop Highlights

This appendix includes a summation of views and opinions expressed by stakeholders who participated in the roadmapping workshops.

General Comments

- Deepwater Gulf of Mexico development, in principle, could take domestic oil production from its current level today (5.9 million barrels per day) to approach the peak achieved in 1970 (9.6 million barrels per day). It is believed that some of the most productive fields of the central Gulf of Mexico are in water depths of 10,000 feet and will require drilling of wells 28,000 to 35,000 feet total depth.

- Ultra-deepwater is a challenging environment, both technically and economically, the cost of failure is high, and the market is naturally reluctant to try new technologies. In addition, new technologies must provide appropriate benefits not only to the customer and the oil and gas company, but to the suppliers and the investors as well in order to truly be implemented by industry.

- Technology is central to the natural gas and oil industry and to its performance. Ultra-deepwater development is a particularly exciting opportunity and many companies are becoming active in deepwater exploration. Many discoveries are smaller in size and will require innovative approaches to develop economically. Continuing advances in technology are critical to the development of these resources.

- Research areas should be defined and reviewed based on industry needs. These needs include a better understanding of the ultra-deepwater environment. In recent years, industry has become more focused on applied research rather than fundamental research. However, the industry recognizes there are fundamental research opportunities in the areas such as new materials, the behavior of produced fluids, and alternative methods of processing the fluids.

- R&D is a business not an activity. It must deliver a product with speed and efficiency and start/stop when appropriate. It must pull from the global asset base of the industry and the best resources (“A-team”) must be engaged. The effort must be customer focused and technology enabled, be driven by vision but measured by clear metrics, and focused to deliver near term with a sense of urgency that demands ruthless execution.

- R&D spending by the industry is very low as a percentage of revenues compared to other industries. This is basically possible because in the global economy, industry can “coast” on older technology by applying this technology in other areas of the world. In newer reservoirs and easier drilling environments around the world (compared to the remaining opportunities in the United States), new technology is less in demand. The industry will develop the technology to produce in deepwater and ultra-deepwater in the United States, but absent some outside stimulus, these developments will come at a very incremental pace. If there is a national interest in increasing U.S. domestic production in the near term, then stimulus could be applied to achieve this goal.

Investors Workshop

- Industry understands that deepwater development is an important business. Investment in technology must be justified either through the proprietary and strategic advantage that it offers to operators or through the attractive to investors because of larger return expectations.

- The S&P 500 is now composed of about 5 percent of energy companies. In 1980, it was about 28 percent. Since then, the market experienced a complete erosion of the capital base that was dedicated towards energy. Technology, on the other hand, is 30 percent of the S&P today and, back in 1980, it was less than 10 percent. The market has experienced a dramatic shift in the capital flows, along with a dramatic shift in the psyche of today's investor. Today's investor is more diversified, looks for liquidity and quick return, and is powered with information. They can afford to bounce from investment to investment very quickly. This creates an incredibly volatile environment for stocks that are related to commodities.

- There is a sense that investors are not familiar with the degree to which the energy business has historically invested in and implemented leading edge technology. Most investors believe the petroleum industry has fostered incremental rather than innovative or revolutionary technology. They also do not believe that major oil and gas companies are forward thinking in their approach to running their business and, perhaps these investors are not aware of the complexity of the many processes in the oil industry.

- Investment in technology for ultra-deepwater development will require collaboration across all areas of a single company and between companies. This collaboration must be pervasive, not just between oil and gas companies, but collaboration between oil and gas companies and their service providers; between oil and gas companies, governmental agencies, and non-governmental organizations; and between oil companies and investors.

- A major investment barrier is not having stable commodity prices and getting everyone to believe that they will stay stable. Many companies were not convinced the prices would stay stable and delayed their capital expenditures, and deferred exploration actions further out. This also affected the field service companies and forced them to wait on the sidelines.

- The independent producers and the E&P companies are now getting the benefit of increased cash flow because of the recent higher prices, but because the Wall Street is not rewarding them on their stock price, companies are obtaining better shareholder value by buying back their shares and paying down debt. Thus, instead of applying funds to exploration and drilling, companies are doing other things, which further exacerbate prices and supply problems.

- The investment climate for the next generation of global oil and gas resources development is being set now. Investment dynamics, once committed preferentially to deepwater or, alternatively, to the more obvious oil and gas exporting nations, could change the entire development of industry.

Producers Workshop

- For most operators, ultra-deepwater are depths greater than 6,000 to 10,000 feet. Extreme depths pose two challenges. One challenge occurs when there is a shallow target in 10,000 feet of water. The other occurs when there is a deep structure, maybe 15,000 to 20,000 feet deep below the 10,000 feet of water. Thus, a key challenge is that reservoirs lying under 6,000 to 10,000 feet of water with productive formation depths of

20,000 to 25,000 cannot be drilled to and are not producible with current technology.

- Challenges associated with deepwater operations are a lack of deepwater infrastructure, the need for dramatically reduced drilling and development costs, improving reservoir definition and characterization, increasing productivity and recovery, improving reliability, and insuring safe operability.

- Riser length, size, and weight necessary for deepwater drilling impose demands on surface facility buoyancy which translates into large, capital intensive drilling units with commensurately high daily rig rates. Rig rates for ultra-deepwater can range from $200,000 to $300,000 per day.

- Currently, deepwater accumulations of 100 million barrels and less are borderline economic and 88 percent of worldwide deepwater reservoirs are thought to be limited to this magnitude. To make these reservoirs economic requires reduced cost of rig operations, reduced cost of facilities, and reduced cycle time from discovery to first oil, in addition to addressing flow assurance issues and wellbore stability issues.

- Limitations in reservoir quality and areal measurements combined with the high cost of ultra-deepwater rigs also causes a concern and possible choice between more appraisal versus accelerated development. More appraisal causes production delays and higher appraisal costs, but reduces uncertainty and allows more efficient facility design. Accelerated or phased development lowers appraisal costs and reduces the time to first oil recovery, but results in less than optimal facility design.

- Infrastructure improvements will need to be addressed, including roads, pipelines, logistical support bases, coordination with states, and education of the workforce in new technologies.

- In order to make the deepwater projects economic, production requirements per well are estimated to be 30 to 40 million barrels per year due to large initial deployment and subsequent drilling and completion costs.

- Independent producers and small entrepreneurs should have input to the process and benefit from the program to encourage competition in the respective marketplaces in which these entities compete. Independents clearly stated a desire to explore, produce, and partner with the majors in the Gulf of Mexico. The increasing number of leases held by independents is proof of this trend.

- Independents offer the desire to help and work with the research organizations and often bring in creative individuals who tend to be entrepreneurial. On the other hand, independents, as smaller companies, do not have the capital resources for R&D and/or large investments.

- Involvement of independent producers in deepwater is necessary as part of the solution in assuring development of deepwater resources. The independents are good at mobilizing people, assets, and technology to move forward.

- Deepwater production operations must be performed in a safe manner to protect both the worker and the environment. Safety and environmental challenges represent another dimension of the technology challenges faced by operators.

- High rig rates and operational costs limit the number of exploration, appraisal, and development wells. This, combined with limitations on well testing, causes uncertainty in reservoir characterization, i.e., size, fluid volumes, fluid quality, and fluid mobility. These uncertainties raise the bar on field size needed to justify development.

- Station keeping technology is challenged, considering high current loads and the threat of hurricanes. This can lead to emergency drive-offs or drift-offs, which require riser disconnects from the sea floor wellheads and cause risk of damage due to the magnitude of the weights and momentum involved.

- Seismic or other remote imaging of geologic strata is challenged by salt layers which can mask true field size and result in costly dry holes or poorly developed fields.

- The oil and gas industry should take advantage of e-commerce and information management tools, i.e., establishments of a knowledge management network to create an environment through which everyone is connected for instant exchange of data and information. Such a network can be used to solve operational problems and expedite the decisionmaking process.

- Facility design itself is pushed to technology limits due to water depths in the U.S. Gulf of Mexico and the deepwater environment with challenges of vortex induced vibration in the drilling rise, mooring system design, and production process train sizing.

- The high levels of recoverable fluid volumes needed per well causes lower quality reservoir sections to be bypassed and less efficient exploitation of recoverable natural gas and oil resources. As reservoir quality reduces, the spacing between economically justified conventional wells increases in direct opposition to the need of what would be required to maximize recovery and minimize bypassed oil.

- The remote nature and deepwater environment increases the cost of mobilizing and performing well workovers or interventions, which are required to increase ultimate recoveries in shelf and land well analogs. With intervention options and improvements, ultimate recovery percentages can be increased by approximately 20 percent. High intervention costs not only limits recovery percentages achievable but it also increases sensitivity to production system reliability.

- Rough sea floor terrain, the threat of mud slides, and the distances back to existing infrastructure increase pipeline cost burdens, which must be borne by new field developments.

- Sea floor temperatures near freezing exacerbate the formation of hydrate and wax plugs in flowlines.

- The young geologic nature of deepwater reservoirs means they are mostly unconsolidated which challenges wellbore stability during drilling and long term completion reliability during production.

- Being able to safely discharge drilling muds and cuttings in every offshore province is key to the success of the industry. It has helped the industry to reduce costs and also manage environmental impacts. On the positive side in the ultra deepwater, discharges are in fact adding energy or nutrients into that environment. In 6,000 to 10,000 feet of water, the sea floor is a very low-energy environment. A positive benefit might well be the fact that as nutrients are increased, energy is added to the system, which may improve biodiversity.

- Properly addressing environmental issues is critical to making the deepwater and ultra-deepwater reservoirs an attractive energy resource. Concerns include accidental release of oil, chemical products, water and sediment quality, air quality and emissions, impacts on biological communities, operations environments, and socioeconomic impact. Two issues of particular interest are air emissions and the potential for larger volumes of hydrocarbons to be released in the event of a loss of well control.

- The public perception of oil spills is that the industry spills millions of barrels of oil all over the world. The truth is, if the industry were doing that, they certainly would not be in business today. There are a number of ways that the industry can improve its public perception by communicating advances in technology for containing oil spills.

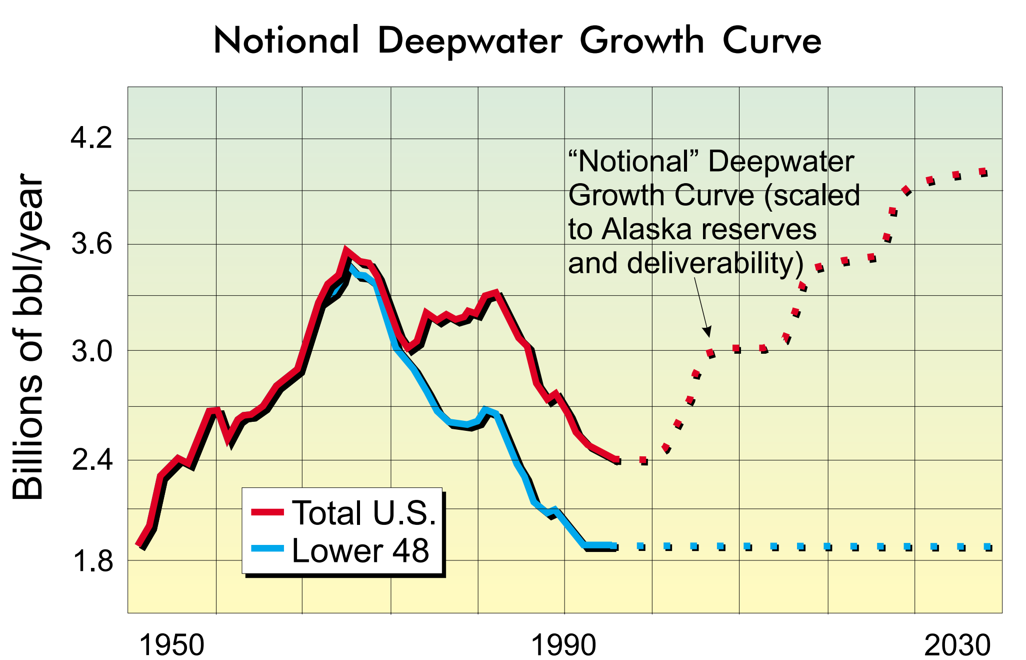
- Workshop attendees noted that the Department of Energy has funded other models for collaboration such as the Partnership for New Generation Vehicles (PNGV) program funded at $263 million per year, the Industries of the Future program funded at $70-90 million per year, and the USABC program funded at $250 million per year with 50/50 cost sharing.

- Dr. Michael Economides and Professor Ron Oligney of the University of Houston presented the following graph at the OSTR Producers Workshop held on August 1, 2000, in Houston, Texas, to indicate the significance of deepwater Gulf of Mexico oil production potential.

Technology Workshop

- Employing new technology is a significant barrier in and of itself. In ultra deepwater, the initial technology deployment represents a multi-million dollar investment. The risks and costs of failure for initial deployment are high. Testing of prototype technologies in marine environments or onshore before deepwater deployment, is an expensive challenge. Producers find it difficult to compromise current production and risk increased expense to support field trials of new technology.

- A key challenge concerning investment for the ultra deepwater involves the necessity to integrate highly complex systems, yet, it seems that less truly integrated R&D is being performed by industry. Market performance is not solely determined by the performance of the technology, but considerably by the system within which it integrates. Because field development expenses are significant, new technologies must rightly meet stringent testing and quality assurance requirements.



Source: Dr. Michael Economides and Professor Ron Oligney, University of Houston, August 2000.

These activities naturally impact the pace of new technology deployment and can adversely impact the economic return of the technology investments.

- Development of dual gradient drilling and riserless drilling will help in reducing costs. Advantages of these technologies include lower risk of formation damage, reduced number of casing strings, and larger wells for higher production rates. These technologies would also allow smaller, older drilling rigs to operate in deepwater. Areas requiring further work include development of subsea pumping and return of mud and cuttings to the surface thereby reducing the hydrostatic load at depth on the formation.

- The cost of operations or "activation" in deepwater needs to be reduced, characterized by some stakeholders as $13/barrel, comprising $3/barrel for finding, $5/barrel for development, and $5/barrel for operations. Targeted cost would be $9/barrel, comprising $3/barrel each for finding, development, and operations. This represents a 40 percent reduction in development and operation (activation) costs. Some of these savings can be realized from advances and improvements in prestack depth imaging, dual gradient drilling (fewer casings, slimmer wells, safer operations), riserless drilling, extended reach drilling, use of intelligent wells (lower intervention costs, real-time production monitoring, maximized production rates), and flow assurance.

- There is an extreme aversion to "first-time" utilization of any technology, particularly in deepwater. Companies do not want to take a chance and risk delays in production start up and/or costly production shut downs. They prefer new technologies to be proven both in quality assurance and in application before they can be considered for actual field installation.

- A "high-intensity" approach to design and commercialization is required to reduce the new technology deployment time frame or the cycle time. Further, evolutionary, rather than revolutionary, technologies will be able to recover deepwater offshore resources.

- Other barriers to recovering natural gas and oil from such greater depths are lack of experience and the cost of dual density drilling and expandable tubulars. The problem is associated with drilling and completing a large enough wellbore to allow significant daily production, i.e., 10,000 to 30,000 barrels a day. This would require five-and-a-half inch tubing or greater. Although expandable tubers will allow expansion of bore holes, they are expensive and new to the marketplace. New tools and equipment and more experience in this type of drilling and completion are required to reduce the cost of operations.

- Use of Autonomous Underwater Vehicles (AUVs) to search for hydrocarbon deposits also would reduce exploration risk. Advantages of AUVs include increased survey efficiency by reducing the reliance on the surface vessel, and the ability to obtain more accurate exploration data. However, further cost reduction and improvements are needed to increase AUV reliability, sensor resolution, and power consumption.

- Utilizing Floating Production Storage and Offloading (FPSO) and/or Floating Storage and Offloading (FSO) units can spread the capital expenditures over several fields. These are proven existing technologies and can eliminate the cost and technical risk of deepwater pipelines, and reduce flow assurance problems. Gas must be produced and exported, i.e., modular, compact gas-to-liquid conversion units would eliminate the need for deepwater pipeline and liquids can be delivered closer to the consumer. MMS and U.S.

Coast Guard approvals are required. Good operational scenarios for emergency conditions (i.e., for hurricanes and spill prevention and containment) also need to be developed.

- There are advanced technology and expertise that exist within the national laboratories that could have a positive impact on increasing production and increasing deepwater reserves. However, an easier access to this "treasure chest" with "better ways of doing business" needs to be established. Communication must be both to and from each party for optimum results.

- Alignment and focus are also barriers to technology development. Internally, within E&P companies, there is a need to align the technologists with the operations and the operational teams; and then there is the need to have an alignment between the E&P companies, the vendors, NGOs, and the regulators so the technology solutions are deployed and represent ongoing vital business opportunities for the companies and the vendors. The industry can benefit if all pieces were aligned and investments were focused for more effective use of limited capital and human resources available.

- Public funds for demonstration and/or testing will accelerate technology commercialization. Technologies should also offer economic return not only in offshore but also in shallow waters, as well as in onshore applications.

- Basic research is necessary in ultra deepwater environments to establish a clear understanding of the physical and ecological factors that will effect the types of technology that are utilized.

- The industry (particularly majors) has a culture that has been slow to embrace change. The preference has been for a slow evolution versus revolutionary change. Disruptive technologies are ignored until old solutions have been totally played out.

- Moving processing and pumping systems to the seafloor would reduce capital cost of production facilities. This would eliminate or reduce surface facility costs, lower pipeline size and costs, and reduce flow assurance problems. Further development is required on subsea separation equipment, subsea pumping, and power distribution and control.

- Gas hydrate formation is perhaps one of the more challenging issues that industry will have to face in the ultra deepwater. There are a number of proposals using various treatment chemicals, but ultimately the goal is prevention. Treatment is extremely difficult, which is of great importance and concern to industry in the area of technology development.

Non-Government Organizations (NGOs) Workshop

- NGOs vary in purpose and constituents and, although they are very diverse, they share overlapping interest and constituents. They consists of both environmental scientific organizations as well as socially directed groups. Because they are stakeholder in this process, they are expected to bring a balanced approach to deepwater development.

- Concerted effort is necessary to ensure that no undue duplication of effort causes delay from the time of concept to commercial application. Limited resources exist in the research laboratories, regulatory agencies, and the NGO community. It is important that all parties involved marshal the efforts of all stakeholders to ensure sustainable development.

- Accepted analytical procedures are needed to ensure that the full spectrum of impacts are defined and where possible, mitigated to ensure the highest quality of resource utilization. Analytical tools include both cost benefit analysis and life cycle analysis.

- Environmental concerns are of paramount importance. The new architecture and new technologies should target low greenhouse gas emissions, reduced discharges of pollutants, near zero spill volumes, and continued stewardship of the Nation's resources and the environment in general.

- Given the remoteness of the location and the uniqueness of the technological advancements necessary to achieve ultra deepwater exploration and production, fundamental trust must be established between the industry, the regulators, and other stakeholders through cooperation and sound process.

- Health, safety, and environmental issues will play a role in ultra deepwater development. An existing problem with the oil and gas industry is its reputation. The public perception of environmental performance has significantly hindered the ability of the industry to access offshore oil and gas resources. A very important role for the industry is to look at technologies that can more effectively improve environmental and health and safety performance as a means of building public trust.

- There is a need for training programs on deepwater drilling and production in terms of health and safety, hazards, and the environment. If workers are not adequately trained to operate in these environments, industry will have a problem, particularly in personnel safety.

- A critical problem currently faced by industry is recruitment and retention of personnel. Unfortunately, the oil and gas industry has developed a reputation for up and down cycles of cutting and hiring, which makes it very difficult for industry to recruit and hire qualified engineers and workers. The industry must find ways to make itself more attractive to new graduates.

- Many key environmental NGOs are not yet focused on the ultra-deepwater ecosystems. Greater outreach and education are necessary to engage them in developing technologies during the early stages of development.

- The ecosystems at ultra-deepwater depths are still being explored, many for the first time. Coordination of research has the potential to enhance our scientific knowledge of these ecosystems, and the demands they place on the new architectures being developed.

- The longer response times to reach a leak or spill at depth will require redundancies in engineering and the development of new fail-safe mechanisms and technologies. These same innovations stand to enhance environmental protection at shallower depths or onshore, thereby multiplying the commercialization potential of and technology developed.

Government Workshop

- Government agencies will need to coordinate their policies, regulations, and permitting requirements to streamline and fast track procedures to assist demonstrations of new technologies. Further, federal and state governments, industry, service companies, national laboratories, and investors need to work together as a team for successful technology commercialization as a single entity alone cannot make it happen.

- An equally important challenge for the industry in offshore development is statutory and regulatory requirements, i.e., those under the Clean Water Act, Oil Pollution Act, Coastal

Zone Management Act, and the Clean Air Act. DOE has aided the industry in the development of synthetic drilling fluids and has worked very closely with EPA in promulgating regulations that allow industry to use synthetic drilling fluids offshore and to be able to discharge the cuttings.

- DOE can play a role in bringing together those with technology, investors, and operators that are willing to try new technologies -- three necessary ingredients for successful commercialization.

- Funding research and development off the critical path of specific field developments is a role that the federal government (e.g., DOE) could play after definition of a new framework for deepwater developments, in addition to considering deepwater royalty relief, tax incentives, and other measures for new technology application.

- Financial incentives should be considered to accelerate the adoption rate of new technologies and to accelerate the growth of deepwater production beyond a status quo baseline forecast.

- The average technology commercialization cycle is about five years from its inception. This is often a significant barrier to new technology commercialization as companies seek faster return on their investments. A DOE role could be pushing forward promising technologies, and acting as a catalyst in bringing together technology providers, technology users, and technology investors.

- Regulatory acceptance of new technology is a key area where industry is making headway and is a key part of the process of evolving technologies. All interested parties need to continue to work together so that new technology can be adopted in the deepwater developments in a safe and environmentally sound manner.

- Regulations and technology must be coordinated, i.e., regulations should recognize technology capabilities and technology must recognize regulatory needs. In addition, regulations must provide a means to allow or promote the introduction of new technology that provides adequate assurance of its safety.

Appendix B
Workshop Attendees

Fereidoun Abbassian
Project Manager, Deepwater Drilling
Upstream Technology
BP Amoco Corporation
501 WestLake Park Boulevard
Houston, TX 77079-2696
Phone: (281) 366-5631
Fax: (281) 366-2905
E-mail: abbassif1@bp.com

Lawrence H. Ake
Petroleum Engineer, Engineering and
Standards Branch
U.S. Department of the Interior
Minerals Management Service
Mail Stop 4700
381 Elden Street
Herndon, VA 22070
Phone: (703) 787-1567
Fax: (703) 787-1575
E-mail: larry.ake@mms.gov

Feridun Albayrak
Vice President
Technology & Management Services, Inc.
18757 North Frederick Road
Gaithersburg, MD 20879
Phone: (301) 670-6390
Fax: (301) 670-1942
E-mail: falbayrak@tms.hq.com;
feridun.albayrak@hq.doe.gov

Chuck Alexander
Manager, Deep Water Center of Excellence
Schlumberger
5599 San Felipe, Suite 1212
Houston, TX 77056
Phone: (713) 513-2609
Fax: (713) 513-2450
E-mail: chalexander@slb.com

David Alleman
National Petroleum Technology Office
U.S. Department of Energy
Williams Center Tower One
One West Third Street, Suite 1400
Tulsa, OK 74102
Phone: (918) 699-2057
Fax: (918) 699-2005
E-Mail: dalleman@npto.doe.gov

D.W. (Don) Allen
Staff Research Engineer
Shell International Exploration and
Production Inc.
Tech. App. & Research
P.O. Box 481, Room 2134
Houston, TX 77001 0481
Phone: (713) 245-7477
Fax: (713) 245-7818
allen@shellus.com

David B. Andersen, P.E.
Senior Technology Leader
Marine and Riser Systems
Brown & Root Energy Services
10200 Bellaire Boulevard (77072-5299)
P.O. Box 4574
Houston, TX 77210-4574
Phone: (281) 575-4370
Fax: (281) 575-3376
E-mail: david.andersen@halliburton.com

David A. Archer
President
P O S C
10777 Westheimer, Suite 275
Houston, TX 77042
Phone: (713) 267-5142
Fax: (713) 784-9219
E-mail: archer@posc.org

Cyril E. Arney
Technical Consultant, Deepwater Development
Marathon Oil Company
P.O. Box 3128
Houston, TX 77253-3128
Phone: (713) 629-6600
Direct Number: (713) 296-3335
Fax: (713) 296-4582
E-mail: cearney@marathonoil.com

Caroline Asirifi
Upstream Public Affairs
ExxonMobil Corporation
Exploration and Producing Operations
800 Bell Street
Houston, TX 77002
Phone: (713) 656-3726
Fax: (713) 656-6625
E-Mail: Caroline.A.Asirifi@exxon.com

Philip N. Asprodites
Commissioner of Conservation
State of Louisiana, Office of Conservation
Department of Natural Resources
P.O. Box 94275
Baton Rouge, LA 70808-9275
Phone: (225) 342-5500
Fax: (225) 342-3705
E-Mail: philipa@dnr.state.la.us

James Barnes
National Petroleum Technology Office
U.S. Department of Energy
Williams Center Tower One
One West Third Street, Suite 1400
Tulsa, OK 74102
Phone: (918) 699-2076
Fax: (918) 699-2005
E-Mail: jbarnes@npto.doe.gov

Paul E. Bayer
Environmental Biologist
Office of Biological and Environmental Research
U.S. Department of Energy
SC-74, GTN
19901 Germantown Road
Germantown, MD 20874-1290
Phone: (301) 903-5324
Fax: (301) 903-8519
E-mail: paulbayer@science.doe.gov

Stephen C. Beasley
President
Tennessee Gas Pipeline Company
1001 Louisiana Street
Houston, TX 77002
Phone: (713) 420-5497
Fax: (713) 420-5505
E-mail: beasleys@epenergy.com

C.M. "Josh" Billings
Vice President
Domestic & International Construction
Coastal Oil and Gas Corporation
Coastal Tower
Nine Greenway Plaza
Houston, TX 77046-0995
Phone: (713) 877-6189
Fax: (713) 297-1745
E-mail: Jossh.Billings@coastalcorp.com

Patricia Blandford
Vice President
Atlantia Offshore Limited
1177 West Loop South, Suite 1200
Houston, TX 77027
Phone: (713) 850-8885
Fax: (713) 622-4236
E-mail: patb@atlantia.com

P.W. (Phil) Bohlmann
Staff Engineer
Shell Deepwater Production, Inc.
Deepwater Division
P.O. Box 60834
New Orleans, LA 70160
Phone: (504) 728-4555
Fax: (504) 728-0158
E-mail: pwbohlmann@shellus.com

Charles H. Bowman
Professor and Head,
R. L. Whiting Endowed Chair
Texas A&M University Harold Vance
Department of Petroleum Engineering
507 Richardson Building
College Station, TX 77843 3116
Phone: (409) 845-2255
Fax: (409) 862-6579
E-mail: bowman@spindletop.tamu.edu

Patrick R. Brice
Associate
Corporate Finance Department
Dain Rauscher Wessels
First City Tower
Suite 400
1001 Fannin
Houston, TX 77002-0220
Phone: (713) 853-0866
Fax: (713) 651-3392
E-Mail: prbrice@dainrauscher.com

David Burnett
Director of Technology
Global Petroleum Research Institute
Harold Vance Dept. of Petroleum Engineering
Texas A&M University
3116 TAMU
College Station, TX 778343-3116
Phone: (979) 845-2274
Fax: (979) 862-1272
E-mail: burnett@gpri.org

Charles C. Burton
Senior Project Manager, Subsea Systems
Deepwater Development Team
Unocal Corporation
14141 Southwest Freeway
Sugar Land, TX 77478
Phone: (281) 287-7549
Fax: (281) 287-7640
E-mail: cburton@unocal.com

Jerald L. Broussard
707 Masters Way
Kingwood, TX 77339
Phone: (281) 433-8886
Broussard@kingwoodcable.com

James Cargas
Special Assistant
Office of Natural Gas and Petroleum Technology
(FE-30)
United States Department of Energy
1000 Independence Ave., SW
Washington, DC 20585
Phone: (202) 586-2092
Fax: (202) 586-6221
E-mail: james.cargas@hq.doe.gov

David Carlisle
Banc of America Securities LLC
9 West 57th Street
New York, NY 10019
Phone: (212) 847-5088
Fax: (212) 583-8225
E-Mail: dcarlisle@bofasecurities.com

Dara W. Childs, Ph.D., P.E.
Director
The Turbomachinery Laboratory
Texas Engineering Experiment Station
The Texas A&M University System
3254 TAMU
College Station, TX 77843-3254
Phone: (979) 845-7417
Fax: (979) 845-1835
E-mail: turbo@turbo-lab.tamu.edu

Craig Colby
Senior Engineer
Deepwater Technology
Det Norske Veritas
16340 Park Ten Place, Suite 100
Houston, TX 77084
Phone: (281) 721-6600
Direct Line: (281) 721-6826
Fax: (281) 721-6904
E-mail: craig.colby@dnv.com

T. Jay Collins
President
Oceaneering International, Inc.
11911 FM 529
Houston, TX 77041
Phone: (713) 329-4500
Fax: (713) 329-4654
E-mail: jcollins@oil.oceaneering.com

Steve Cosby
Manager, Sales and Contracts, Gulf of Mexico
Global Marine Drilling Company
777 N. Eldridge Parkway
Houston, TX 77079-4493
Phone: (281) 596-5830
Fax: (281) 597-9936
E-mail: steve.cosby@glm.com

E.T. (Eddie) Cousins
Project Manager
Conoco, Inc.
North Sea, 3058
600 North Dairy Ashford (77079-1175)
P.O. Box 2197
Houston, TX 77252-2197
Phone: (281) 293-2296
Fax: (281) 293-2158
E-mail: eddie.t.cousins@usa.conoco.com

David Crews
Director, Commercial Business Development
Spacehab, Inc.
555 Forge River Road, Suite 150
Webster, TX 77598-4336
Phone: (281) 228-7829
Fax: (281) 286-9673
E-mail: dcrews@spacehab.com

Tyler Dann II
Principal, Senior Research Analyst
Banc of America Securities LLC,
Montgomery Division
700 Louisiana, 45th Floor
Houston, TX 77002
Phone: (713) 247-7377
Fax: (713) 247-6931
E-mail: tdann@bofasecurties.com

Dr. Donald W. Davis
Administrator
Louisiana Applied and Educational Oil Spill
Research and Development Program
Louisiana Oil Spill Coordinator's Office
Office of the Governor
Louisiana State University, Energy Program
258 A/B Military Science Building
Baton Rouge, LA 70803
Phone: (225) 388-3481
Fax: (225) 388-0403
E-mail: osradp@attglobal.net

Andronikos Demarchos
Petroleum Engineer, P.E.
MJE Consultants, Inc.
8410 Castle Pond Ct.
Houston, TX 77095
Fax: (281) 345-1891
E-mail: demarchos@yahoo.com
Mobile: (281) 989-7836

Andy Dement
Director of Sales
R&B Falcon Drilling
(International & Deepwater) Inc.
901 Threadneedle
Houston, TX 77079 2911
Phone: (281) 556-2210
Fax: (281) 759-7954
E-mail: adement@rbfalcom.com

Shannon Michael Divin
Account Manager
Global Industries, Ltd.
5151 San Felipe, Suite 900
Houston, TX 77056
Phone: (713) 479-7816
Fax: (713) 479-7880
E-mail: shannond@globalind.com

Donald F. Duttlinger P.E.
Executive Director
Petroleum Technology Transfer Council
1101 16th Street, NW, Suite 1-C
Washington, DC 22036 4803
Phone: (202) 785-2225
Fax: (202) 785-2240
E-mail: dduttlinger@pttc.org

Christine Economides
Global Account Manager
Schlumberger Oilfield Services
1325 S. Dairy Ashford, Suite 400
Houston, TX 77077 2332
Phone: (281) 368-8732
Fax: (281) 368-8686
E-mail: economides@houston.oilfield.slb.com

Dr. Michael Economides
Professor
University of Houston
Department of Chemical Engineering
Houston, TX 77204-4792
Phone: (713) 743-4323
Fax: (713) 743-4330
E-Mail: mje@uh.edu

Kevin Edgar
New York Stock Exchange
801 Pennsylvania Avenue, NW
Washington, DC 20004
Phone: (202) 347-4300
Fax: (202) 347-4370
E-Mail: kedgar@nyse.com

David Eggers, P.E.
Business Development Manager
Mentor Subsea Technology Services, Inc.
200 WestLake Park Boulevard
Houston, TX 77009-2663
Phone: (281) 870-5266
Fax: (281) 870-5111
E-mail: dweggers@mcdermott.com

James A. Ermon, Jr.
Senior Business Analyst
J. Ray McDermott, S.A,
200 WestLake Park Boulevard
Houston, TX 77079
P.O. Box 219264
Houston, TX 77218-9264
Phone: (281) 870-5930
Fax: (281) 870-5409
E-mail: jaermon@mcdermott.com

Rod L. Eson
Executive Vice President
VENECO, Inc.
217 State Street
Santa Barbara, CA 93101
Phone: (805) 966-6596
Fax: (805) 966-9980
E-mail: reson@venecoinc.com

J. Wayne Esser
Director, Commercial Programs
The Boeing Company
13100 Space Center Blvd. MCJHOU-2630
Houston, TX 77059-3556
Phone: (281) 244-4694
Fax: (281) 244-4114
E-mail: wayne.esser@boeing.com

Leigh Farris
Account Executive
Dancie Perugini Ware Public Relations
3000 Chase Tower
Houston, TX 77002
Phone: (713) 224-9115
Fax: (713) 224-3248
E-Mail: leigh@dpwpr.com

Dr. Raymond W. Flumerfelt, P.E.
Professor and Dean
University of Houston
Cullen College of Engineering
Houston, TX 77204-4814
Phone: (713) 743-4214
Fax: (713) 743-4207
E-Mail: rwf@uh.edu

James Ford
Director, Federal Relations Dept.
American Petroleum Institute
1220 L Street, NW
Washington, DC 20005-4070
Phone: (202) 682-8210
Fax: (202) 682-8294
E-Mail: fordj@api.org

Keith B. Forman
Chief Financial Officer
El Paso Energy Partners, L.P.
P.O. Box 2511
Houston, TX 77252-2511
Phone: (713) 420-5218
Fax: (713) 420-5477
E-mail: formank@epenergy.com

Joe B. Foster
Chairman, President, and Chief Executive Officer
Baker Hughes Incorporated
3900 Essex Lane, Suite 1200 P.O. Box 4740
Houston, TX 77210 4740
Phone: (713) 439-8751
Fax: (713) 439-8966
E-mail: JoeB.Foster@bakerhughes.com

Jesse D. Frederick
Vice President
WZI, Inc.
4700 Stockdale Highway
Suite 120
Bakersfield, CA 93389
Phone: (661) 326-1112
Fax: (661) 326-0191
E-Mail: jfrdrck@wziinc.com

Julie Freeman
Andersen Consulting
133 Peach Tree Street, Suite 2600
Atlanta, GA 30303
Phone: (404) 880-9100
Fax: (678) 657-1033

Susan Ganz
Marketing Communications Manager, Resevoir Management
Schlumberger
5599 San Felipe, Suite 1700
Houston, TX 77056 2722
Phone: (713) 513-2480
Fax: (713) 513-2012
E-mail: sganz@houston.geoquest.slb.com

Robert Gee
Assistant Secretary for Fossil Energy
U.S. Department of Energy (FE-1)
1000 Independence Avenue, SW
Washington, DC 20585
Phone: (202) 586-6660
Fax: (202) 586-7847

Joseph Gettrust, Ph.D.
Naval Research Laboratory
1005 Balsh Blvd., Code 7430
Stennis Space Center, MS 39529
Phone: (228) 688-5475
E-Mail: gettrust@nrlssc.navy.mil

Norman Goldstein
Lawrence Berkeley National Laboratory
1 Cyclotron Rd., MS: 90-1116
Phone: (510) 486-5961
Fax: (510) 486-5686
E-Mail: negoldstein@lbl.gov

Hugh Gray
Vice President, Deepwater Developments
EEX Corporation
2500 City West Blvd., Suite 1400
Houston, TX 77042
Phone: (713) 243-3280
Fax; (713) 243-3322
E-mail: hgray@eex.com

Roland Guidry
The Louisiana Oil Spill Spill Coordinator
Office of the Governor
624 N. 4th Street, Suite 800
Baton Rouge, LA 70802
Phone: (225) 219-5800
Fax: (225) 219-5802
E-mail: losco@linknet.idt.net

Scott Hammond
President and CEO
Bell Geospace, Inc.
2 North Point Dr., Suite 400
Houston, TX 77060
Phone: (281) 591-6900, ext. 205
Fax: (281) 591-6911
E-mail: shammond@bellgeo.com

Christine Hansen
Executive Director
Interstate Oil and Gas Compact Commission
P.O. Box 53127
Oklahoma City, OK 73152-3127
Phone: (405) 525-3556
Fax: (405) 525-3592
E-mail: c.hansen@iogcc.state.ok.us

Alan Harp
Dirks & Co.
12906 Brant Rock, #9
Houston, TX 77082
Phone: (832)-654-5862

Arthur M. Hartstein, Ph.D.
Program Manager, Oil and Gas Processing
U.S. Department of Energy,
Office of Fossil Energy (FE-33)
1000 Independence Ave., SW
Washington, DC 20585
Phone: (301) 903-2760
Fax: (301) 903-9482
E-mail: arthur.hartstein@hq.doe.gov

Paul R. Hays
Deep Star Project Manager
P.O. Box 430
Bellaire, TX 77402-0430
Phone: (713) 432-3172
Fax: (713) 432-3112
E-mail: hayspr@texaco.com

Jerry Henderson
Vice President
International Programs
National Organization of Black County Officials
440 First Street, NW, Suite 410
Washington, DC 20001
Phone: (202) 347-6953
Fax: (202) 393-6596
E-mail: nobco@naco.org

Aston A. Hinds, Ph.D.
Vice President
Halliburton Health, Safety & Environment
4100 Clinton Drive (77020-6299)
Post Office Box 3
Houston, TX 77001 0003
Phone: (713) 676-3948
Fax: (713) 676-3920
E-mail: aston.hinds@halliburton.com E-mail

G. Rick Holder
Trident Financial Corp.

Mark Holland
Global Product Champion, Expandable Casing
Eventure
110 Capital Drive
Lafayette, LA 70508
Phone: (281) 596-6666
Fax: (337) 232-4792
E-mail: mark.holland@EventureGT.com

James A. Hollowell, P.E.
Facilities Design Manager
Marathon Oil Company
5555 San Felipe/77056-2725
P.O. Box 3128/77253-3128
Houston, TX
Phone: (713) 296-3326
Fax: (713) 296-4473
E-mail: JAHollowell@MarathonOil.com

Jennifer Hu
Research Associate
Simmons & Company International
700 Louisiana Street
Suite 5000
Houston, TX 77002
Phone: (713) 223-7840
Fax: (713) 223-7845
E-mail: jhu@simmons-intl.com

Alan R. Huffman, Ph.D.
Manager, Seismic Imaging Technology Center
Exploration Production Technology
Conoco, Inc.
5 RWA, 1000 South Pine St.
P.O. Box 1267
Ponca City, OK 74602-1267
Phone: (580) 767-5405
Houston Phone: (281) 293-6718
Fax: (580) 767-6067
E-mail: alan.r.huffman@usa.conoco.com

Jean-Pierre Hurel
TOTAL FINA ELF
Exploration and Production USA
Elf Exploration, Inc.
1000 Louisiana, Suite 3800
Houston, TX 77002-5091
Phone: (713) 739-2280
Fax: (713) 650-1189
E-mail: jphurel@elfexp.com

David Johnson, Ph.D.
Director
Center for Sponsored Coastal Ocean Research
National Oceanic & Atmospheric Administration
Coastal Ocean Program, N/SCI2
1315 East-West Highway
Silver Spring, MD 20910
Phone: (301) 713-3338 x 134
E-mail: david.johnson@noaa.gov

Dan Jolly
Vice President
Oceaneering International, Inc.
11917 FM 529
Houston, TX 77041
Phone: (7130 893-6909x7252
Fax: (713) 893-6950
E-Mail: djolly@oie.oceaneering.com

Andrew J. Kemmerer, Ph.D.
Director, Office of Habitat Conservation
U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Marine Fisheries Service
1315 East-West Highway
Silver Spring, MD 20910
Phone: (301) 713-2325
Fax: (301) 713-1043
E-mail: andrew.kemmerer@noaa.gov

W. Michael Kemp
Vice President and Chief Executive Officer
Texas A&M University at Galveston
P.O. Box 1675
Galveston, TX 77553 1675
Phone: (409) 740-4403
Fax: (409) 740-4407
E-mail: kemp@tamug.tamu.edu

James J. Kendall, Ph.D.
Chief, Environmental Studies Branch
U.S. Department of the Interior
Minerals Management Service
Environmental Studies Program (MS-4041)
381 Elden Street
Herndon, VA 20710
Phone: (703) 787-1717
Fax: (703) 787-1053
E-mail: james.kendall@mms.gov

Charles F. Kennel
Director
Scripps Institution of Oceanography
University of California, San Diego
9500 Gilman Drive
La Jolla, CA 92093-0210
Phone: (858) 534-2826
Fax: (858) 453-0167
E-mail: ckennel@ucsd.edu

Stephen E. Kibbee, P.E.
Vice President
Atlantia Offshore Limited
1177 West Loop South, Suite 1200
Houston, TX 77027
Phone: (713) 850-8885
Fax: (713) 622-4236
E-mail: stevek@atlantia.com

David Knox
Account Manager, New Orleans
Bell Geospace, Inc.
2 Northpoint Drive, Suite 715
Houston, TX 77060
Phone: (504) 391-7239
Fax; (504) 391-7239
E-mail: dknox@bellgeo.com

Jackie LaFontaine
Deepwater Solutions Technology Manager
Halliburton Energy Services
10200 Bellaire Boulevard
91-1SW-13F
Houston, TX 77072-5299
Phone: (281) 575-5674
Fax: (281) 575-4172
E-mail: jackie.lafontain@halliburton.com

William F. Lawson, Ph.D.
Director
U.S. Department of Energy
National Petroleum Technology Office
One West Third St., Suite 1400
Tulsa, OK 74103
Phone: (918) 699-2009, (918) 699-2001
Fax: (918) 295-6585, (918) 699-2005
E-mail: blawson@npto.doe.gov

Terry Lechinger
Stress Engineering Services, Inc.
13800 Westfair East Drive
Houston, TX 77041
Phone: (281) 955-2900
Fax: (281) 955-2638
E-Mail: terry.lechinger@stress.com

Roy C. Long
Project Manager, Gas Supply Projects
U.S. Department of Energy
National Energy Technology Laboratory
3610 Collins Ferry Road
P.O. Box 880
Morgantown, WV 26507-0880
Phone: (304) 285-4236
Fax: (304) 285-4403/4469
E-mail: rlong@netl.doe.gov

Jim Longbottom
Intersection Consulting
Complex Well Architecture and
Deepwater Systems
P.O. Box 1115
Magnolia, TX 77353
Phone: (936) 372-3367
Fax: (936) 372-3367
E-mail: jimlo@pdq.net

Tomie C. Magee
Manager, Production Technology
Conoco, Inc.
Offshore, 1072
600 North Dairy Ashford (77079-1175)
Houston, TX 77252-2197
Phone: (281) 293-6090
Fax: (281) 293-3424
E-mail: Tomie.C.Magee@usa.conoco.com

Jon A. Marshall
Executive Vice President and Chief
Operating Officer
Global Marine Inc.
777 N. Eldridge Parkway
Houston, TX 77079 4493
Phone: (281) 496-8000
Fax: (281) 596-5298
E-mail: jon.marshall@glm.com

Paul E. Martin
Chief, Research and Engineering Branch
U.S. Department of the Interior
Minerals Management Service
Phone: (703) 787-1626
Fax: (703) 787-1555
E-mail: Paul.Martin@mms.gov

Roy A. Matheny
President
RAMCO Oil and Lubricants, Inc.
2721 South Eagle Way
Aurora, CA 80014
Phone: (303) 873-9700
Fax: (303) 873-9700
E-Mail: roymath1@hotmail.com
rolllc@uswest.net

Dr. William C. Maurer
President
Maurer Engineering
2916 West T.C. Jester
Houston, TX 77018 7098
Phone: (713) 683-8227
Fax: (713) 683-6418
E-Mail: maurer@maurereng.com

Mark McCurley
Vice President Corporate Business Development
Halliburton Company
10200 Bellaire Boulevard
Houston, TX 77072-5299
Phone: (281) 575-4378
Fax: (281) 575-4055
E-mail: mark.mccurley@halliburton.com

William J. McDonald, Ph.d.
Executive Vice President
Maurer Engineering
2916 West T.C. Jester
Houston, TX 77018-7098
Phone: (713) 683-8227x210
Fax: (713) 683-6418
E-mail: mcdonald@maurereng.com

Elena Subia Melchert
Petroleum Engineer/Manager,
Advanced Drilling, Completion & Stimulation
U.S. Department of Energy,
Office of Fossil Energy
Office of Natural Gas & Petroleum
Technology (FE-30)
1000 Independence Ave., SW
Washington, DC 20585
Phone: (202) 586-5095
Fax: (202) 586-6221
E-mail: elena.melchert@hq.doe.gov

Bijan Menner-Amini
President
EM-Tech, L.L.C.
15832 W. Hardy Rd., #650
Houston, TX 77060
Phone: (281) 847-3191
Fax: (281) 847-1277
E-mail: bamini@em-tech.org

William J. Merrell
President
H. John Heinz III Center for Science, Economics, and the Environment
1001 Pennsylvania Avenue, NW
Suite 735S
Washington, DC 20004
Phone: (202) 737-6307
Fax: (202) 737-6410
E-mail: merrell@heinzctr.org

M.B. Mick
Manager
Deepwater Development
Marathon Oil Company
5555 San Felipe Road/77056-2725
P.O. Box 3128/77253-3128
Houston, TX
Phone: (713) 296-3341
Fax: (713) 296-4582
E-mail: mbmick@marathonoil.com

Jill Mitchell
FMC Energy Systems
FMC Corporation
1803 Gears Road
Houston, TX 77067
Phone: (281) 591-4000
Fax: (281) 591-4134
E-Mail: bruce_bullock@fmc.com

Charles D. Mohrmann
McKinsey & Company, Inc.
2 Houston Center, Suite 3500
Houston, TX 77010
Phone: (713) 751-4822
Fax: (713) 650-1050
E-mail: charles_mohrmann@mckinsey.com

Duncan T. Moore
Associate Director for Technology
Executive Office of the President
Office of Science and Technology Policy
Washington, DC 20502
Phone: (202) 456-0032
Fax: (202)456-0028
E-mail: dmoore@OSTR.EOP.GOV

Bob Moran
National Ocean Industries Association
1120 G Street, NW, Suite 900
Washington, D.C. 20005
Phone: (202) 347-6900
Fax: (202) 347-8650
E-Mail: bobm@noia.org

Jerry L. Morris, P.E.
Business Development Manager-Deepwater
Shell International Exploration and Production Inc.
Technology Ventures
200 N. Dairy Ashford
Houston, TX 77079
Phone: (281) 544-4904
Fax: (281) 544-2739
E-mail: jmorris@shellus.com

Denby Grey Morrison, P.E.
Staff Research Engineer
Shell International Exploration and Production, Inc.
P.O. Box 481
Hoston, TX 77001-0481
Phone: (713) 245-7409
Fax: (713) 245-7233
E-mail: br37dgm@shellus.com

James Murphy
U.S. Securities and Exchange Commission
450 5th Street, N.W.
Washington, DC 20549
Phone: (202) 942-2939
Fax: (202) 942-9528
E-Mail: murphyja@sec.gov

Ronald Oligney
University of Houston
1811 Breezy Bend
Kathy, TX 77494
Phone: (218) 391-5660
E-Mail: oligney@neosoft.com

Emil Peña
Deputy Assistant Secretary, Office of Natural Gas
and Petroleum Technology (FE-30)
United States Department of Energy,
Office of Fossil Energy
1000 Independence Ave., SW
Washington, DC 20585
Phone: (202) 586-5600
Fax: (202) 586-6221
E-mail: emil.pena@hq.doe.gov

Walter Pendelton
RAMCO Oil and Lubricants, Inc.
2721 South Eagle Way
Aurora, CA 80014
Phone: (303) 873-9700
Fax: (303) 873-9700

Brian Petty
International Association of Drilling Contractors
1901 L Street, NW, Suite 702
Washington, DC 20036-3505
Phone: (202) 293-0670
Fax: (202) 872-0047
E-Mail: brian.petty@iadc.org

Claude E. Pichot
Business Interface Manager
Shell International Exploration and
Production, Inc.
Technology Applications & Research
200 N. Dairy Ashford, 3454 wck
Houston, TX 77079
Phone: (281) 544-2232
Fax: (281) 544-3596
E-mail: claudepichot@shellus.com

Thierry Pilenko
President
GeoQuest
5599 San Felipe, Suite 1700
Houston, TX 77056
Phone: (713) 513-2711
Fax: (713) 513-2060
tpilenko@houston.geoquest.slb.com

Richard Poore
National Science Foundation
Division of Ocean Sciences
4201 Wilson Blvd., Suite 725
Arlington, VA 22230
Phone: (703) 292-8582
Fax: (703) 292-9085
E-Mail: rpoore@nsf.gov

Lt. Com. Russ Proctor
U.S. Coast Guard
2100 2nd Street, SW
Washington, DC 20594
Phone: (202) 267-0499
Fax: (202) 267-4394
E-Mail: rproctor@comdt.uscg.mil

Thomas E. Prosser
Project Manager
Maurer Engineering
2916 West T.C. Jester
Houston, TX 77018-7098
Phone: (713) 683-8227x260
Fax: (713) 683-6418
E-mail: prosser@maurereng.com

Vikram Rao, Ph.D., Divisional Vice President
Halliburton Energy Services
Reservoir Description/Integrated
Technology Products
10200 Bellaire Boulevard (77072-5299)
Post Office Box 4574, (91)2NW16B
Houston, TX 77210-4574
Phone: (281) 575-3662
Fax: (281) 575-5589
E-mail: vik.rao@halliburton.com

John Reynolds
Lime Rock Partners
518 Riverside Avenue
Westport, CT 06880
Phone: (203) 293-2750
Fax: (203) 293-2760

Del Richter
Technology Project Manager
Upstream Technology - Floating Subsea Systems
Texaco
4800 Fournace
P.O. Box 430
Bellaire, TX 77401
Phone: (713) 432-3570
Fax: (713) 432-3290
E-mail: richtdl@texaco.com

Ron Robinson
Texaco
1111 Bagby, Suite 334
Houston, TX 77002
Phone: (713) 752-6390
Fax: (713) 752-7726
E-mail: RobinRJ@texaco.com

Walter Rosenbusch
Director
Minerals Management Service
U.S. Department of the Interior
1849 C Street, NW
Washington, D.C. 20240
Phone: 202 208-3500
Fax: 202 208-7242
E-Mail: walter.rosenbusch@mms.gov

Mark Rubin
Upstream General Manager
American Petroleum Institute
1220 L Street, NW
Washington, DC 20005-4070
Phone: (202) 682-8116
Fax: (202) 682-8426
E-mail: rubinm@api.org

Mamdouh M. Salama, Ph.D.
FASME
Senior Research Fellow, Production Technology
Conoco, Inc.
4434 Research West
1000 South Pine
Ponca City, OK 74602-1267
Phone: (580) 767-2738
Fax: (580) 767-6381
E-mail: mamdouh.m.salama@usa.conoco.com

Luigi Saputelli
University of Houston
Chemical Engineering Department
4800 Calhoun Road
Houston, TX
Phone: (713) 743-4335
Fax: (713) 743-4323
E-mail: saputelli@uh.edu

Dawn M. Schrepel
Director, Project Development
Morgan Meguire, LLC
1225 I Street, NW
Washington, DC 20005
Phone: (202) 661-6183
Fax: (202) 661-6182
E-mail: dawnschrepel@morganmeguire.com

Art J. Schroeder, Jr.
Principle
Energy Valley
526 Little John Lane
Houston, TX 77024
Phone: (713) 681-1482
Fax: (713) 681-0020
E-mail: art@ArtSchroeder.com

Roger Schwall
U.S. Securities and Exchange Commission
450 5th Street, N.W.
Washington, DC 20549
Phone: (202) 942-1870
Fax: (202) 942-9528
E-mail: schwallr@sec.gov

Jim Schumacher
Texaco
Upstream Technology
3901 Briar Park Dr.
Houston, TX 77042
Phone: (713) 954-6060
E-mail: schumjp@texaco.com

Malcolm Sharples, Ph.D., P.E.
Vice President Offshore Technology
ABS Americas
ABS Plaza
16855 Northchase Drive
Houston, TX 77060-6008
Phone: (281) 877-6513
Fax: (281) 877-6001
E-mail: msharples@eagle.org

William W. Sherrill
Executive Professor, Director CEI
University of Houston
College of Business Administration
Center for Entrepreneurship
and Innovation (CEI)
Houston, TX 77204-6283
Phone: (713) 743-4752
Fax: (713) 743-4748
E-mail: cei@uh.edu

Gerard W. Smith
Vice President
The Corporate Response Group Inc.
4601 N Fairfax Dr., Suite 1010
Arlington, VA 22203
Phone: (703) 243-0600 ext.16
Fax: (703) 243-8120
Cell: (202) 243-8120
E-mail: gsmith@crgdc.com

Harry D. Smith, Jr.
Director of Research
Halliburton Energy Services
3000 N. Sam Houston Parkway E.,
Post Office Box 60070 (77204)
Houston, TX 77032
Phone: (281) 871-7276
Fax: (281) 871-7272
E-mail: harry.smith@halliburton.com

Jennifer K. Smith
Smith Fairfield, Incorporated
101 1/2 South Union Street
Alexandria, VA 22314
Phone: (703) 684-5100
Fax: (703) 684-5424
E-mail: jsmith@smithfairfield.com

Kenneth L. Smith, P.E.
Project Manager - Subsea Mudlift Drilling
Conoco, Inc.
600 North Dairy Ashford (77079-1175)
P.O. Box 2197, NS 3068
Houston, TX 77252-2197
Phone: (281) 293-1855
Fax: (281) 293-2158
E-mail: kenneth.l.smith-2@usa.conoco.com

P.R. (Pete) Smullen
Manager External Technology
Shell E&P Technology Company
Bellaire Technology Center
3737 Bellaire Blvd.
Houston, TX 77025
Phone: (713) 245-7343
Fax: (713) 245-7229
E-mail: prsmullen@shellus.com

Peter D. Sommer
Director
Texaco Gas International
1111 Bagby, Suite 3305
Houston, TX 77002
Phone: (713) 752-6071
Fax: (713) 752-4736
E-mail: sommepd@texaco.com

Gene W. Sparkman
Director
Energy Research Clearing House
4800 Research Forest Drive
The Woodlands, TX 77381
Phone: (281) 363-7936
Fax: (281) 364-6097
E-mail: sparkman@erch.org

Robert J. Stayton
Manager, Exploration and Production Customer Partnerships
Gas Technology Institute
4800 Research Forest Drive
The Woodlands, TX 77381-4142
Phone: (281) 363-7991
Fax: (281) 363-7990
E-mail: rstayton@gri.org

Barry Stem
U.S. Securities and Exchange Commission
450 5th Street, N.W.
Washington, DC 20549
Phone: (202) 942-1990
Fax: (202) 942-9528
E-Mail: stemb@sec.gov

Sherry A. Stephens
President
PESA (Petroleum Equipment Suppliers Association)
9225 Katy Freeway
Houston, TX 77024 1586
Phone: (713) 932-0168
Fax: (713) 932-0497
E-Mail: sstephen@pesa.org

Robert Stewart
National Ocean Industries Association
1120 G Street, N.W., Suite 900
Washington, D.C. 20005
Phone: (202) 347-6900
Fax: (202) 347-8650
E-mail: bobs@noia.org

Jerry Streeter
J.P. Kenny, Inc.
16340 Park 10 Place Dr.
Suite 242
Houston, TX 77084
Phone: (281) 492-3333
Fax: (281) 647-6825
E-mail: jerry.streeter@jpkhouston.com

William D. Stringfellow, P.E.
Engineering Specialist
Hydril Company
P.O. Box 60458
Houston, TX 77205-0458
8641 Moers Road
Phone: (713) 941-6639 ext. 131
Fax: (713) 910-8819
E-mail: bstringfellow@hydril.com

L.H. “Lee” Taylor
General Manager
Mentor Subsea Technology Services, Inc.
200 WestLake Park Boulevard
Houston, TX 77079-2663
Phone: (281) 870-5918
Fax: (281) 870-5324
E-mail: lhtaylor@mcdermott.com

Jim Terry
Director, Advanced Well Construction Systems
Halliburton Energy Services
Park Centre One
9950 Westpark Drive
Houston, TX 77063
Phone: (713) 243-2626
Fax: (713) 243-2660
E-mail: jim.terry@halliburton.com

Scott W. Tinker
Director
Bureau of Economic Geology, The University of Texas At Austin
University Station, Box X
Austin, TX 78713 8924
Phone: (512) 471-0209
Fax: (512) 471-0140
E-mail: scott.tinker@beg.utexas.edu

Bill Todd
Maurer Engineering
2916 West T.C. Jester
Houston, TX 77018 7098
Phone: (713) 683-8227
Fax: (713) 683-6418

Brad Tomer
National Energy Technology Laboratory (NETL)
U.S. Department of Energy
3610 Collins Ferry Road
Morgantown, WV 26507
Phone: (304) 285-4692
Fax: (304) 285-4403
E-Mail: brad.tomer@netl.doe.gov

Trudy Transtrum
U.S. Department of Energy
Office of Natural Gas & Petroleum Technology (FE-30)
Office of Fossil Energy
1000 Independence Avenue, SW
Washington, DC 20585
Phone: (202) 586-7253
Fax: (202) 586-6221
E-Mail: trudy.transtrum@hq.doe.gov

John J. Vasselli
President and CEO
Houston Advanced Research Center
4800 Research Forest Drive
The Woodlands, TX 77381
Phone: (281) 363-7910
Fax: (281) 363-7914
E-mail: jvasselli@harc.edu

Ron Villere
Business Development Manager
Oceaneering International, Inc.
11911 FM 529
Houston, TX 77041-3011
Phone: (713) 329-4500
Direct: (713) 329-4563
Fax: (713) 329-4951
E-mail: rvillere@ops.oceaneering.com

Charlie Vise
Team Leader Production and Intervention
1515 Poydras Street, Suite 2700
New Orleans, LA 70112
Phone: (504) 592-5333
Fax: (504) 592-5492
E-mail: vise@slb.com

Dr. Peter R. Vogt
Geophysicist
Marine Physics Branch - Code 7420
Naval Research Laboratory
4555 Overlook Ave., SW
Washington, DC 20375-5320
Phone: (202) 404-1102
Fax: (202) 767-0167
E-mail: vogt@qur.nrl.navy.mil

John Vozniak
Project Leader, Deepwater Development Group
Baker Oil Tools
654 N. Sam Houston Pkwy. East, Suite 400
Houston, TX 77060
Phone: (713) 625-5226
Fax: (713) 625-6598
E-mail: john.vozniak@bakeroiltools.com

Su-Su Wang, Ph.D.
University of Houston
Composites Engineering and Applications Center
Houston, TX 77204
Phone: (713) 743-5057
Fax: (713) 743-5063
E-Mail: ssw@uh.edu

E.G. Ward, Ph.D.
Associate Director
Offshore Technology Research Center
1200 Mariner Drive
Texas A&M University
College Station, TX 77845
Phone: (409) 862-2288
Fax: (409) 845-9273
E-mail: egwward@tamu.edu

Steven A. Wheeler
Texaco Fellow, Technology Leader
Texaco
4800 Fournace Place
Bellaire, TX 77401-2324
Phone: (713) 432-3473
Fax: (713) 432-3290
Telex: TLX TRT 166752
E-mail: Wheelsa@texaco.com

A.J. Wheelock
Vice President
PETROCOM
5901 Earhart Expressway
Harahan, LA 70123
Phone: (504) 736-9400
Fax: (504) 818-1261
E-mail: awheelock@petrocom.coml

Governor Mark White
2708 West Lane
Houston, TX 77027
Phone: (512) 413-2692
E-Mail: mark@geovox.com

Kenneth White
Smith Fairfield, Incorporated
101 1/2 South Union Street
Alexandria, VA 22314
Phone: (703) 684-5100
Fax: (703) 684-5424
E-mail: kwhite@smithfairfield.com

Earl M. Whitney, Ph.D.
Laboratory Project Leader Oil and Gas Programs
Los Alamos National Laboratory
MS D446
Los Alamos, NM 87545
Phone: (505) 667-3595
Fax: (505) 667-3494
E-mail: whitney@lanl.gov

Sean M. Wiggins
Project Scientist
Marine Physical Laboratory
Scripps Institution of Oceanography
University of California, San Diego
La Jolla, CA 92093-0205
Phone: (858) 822-2744
Fax: (858) 534-6849
E-mail: swiggins@ucsd.edu

Thomas E. Williams
Vice President, Marketing and
Business Development
Maurer Engineering
2916 West T.C. Jester
Houston, TX 77018-7098
Phone: (713) 683-8227x228
Fax: (713) 683-6418
E-mail: t.williams@maurereng.com

Mary Jane Wilson
President and CEO
WZI, Inc.
4700 Stockdale Highway
Suite 120
Bakersfield, CA 93389
Phone: (661) 326-1112
Fax: (661) 326-0191
E-mail: wzi@wziinc.com

Bradley Wissinger
Boeing
13100 Space Center Blvd.
Houston, TX 77059-3556
Phone: (281) 244-4404
Fax: (281) 244-4215
E-mail: d.b.wissinger@boeing.com

Larry L. Wooden
Manager, Reputation and Public Affairs
Shell Exploration and Production Company
P.O. Box 2463
Houston, TX 77252
Phone: (713) 241-0497
Fax: (713) 241-7053
E-mail: lwwooden@shellus.com

APPENDIX C
REFERENCES

1. Energy Information Administration, *"Annual Energy Review 1999,"* DOE/EIA-0384(99), July 2000.

2. Energy Information Administration, *"Annual Energy Outlook 2000,"* DOE/EIA-0383(2000), December 1999.

3. Economides, Michael, Ph.D., and Oligney, Ronald, *"The Color of Oil,"* January 2000.

4. Economides, Michael, Ph.D., *"Deep Offshore Initiative - A Compelling Rationale and Way Forward,"* August 1, 2000.

5. Banc of America Securities, Equity Research, *"e-Oil: Integrated Oil and Oil Services,"* March 2000.

6. Banc of America Securities; Equity Research, *"Offshore Drilling Contractors,"* August 1999.

7. NationsBanc Montgomery Securites, *"The Deepwater Opportunity,"* July 1998.

8. Miscellaneous presentations submitted at the regional OSTR workshops, including those provided by: Joe Foster, Baker Hughes; Michael Economides, Ph.D., University of Houston; Jerry Morris, Shell Technology Ventures; John Vozniak, ASME Petroleum Division; E. G. Ward, Offshore Technology Research Center; Ron Oligney, University of Houston; Art Schroeder, Energy Valley; Cyril Arney, Marathon; T. J. Collins, Oceaneering International, Inc.; Tom Prosser, Maurer Engineering; Paul Robert Hay, Texaco (Deepstar); John Vasselli, Houston Advanced Research Center; Jim Longbottom, University of Houston; Vik Rao, Halliburton.

DOE OSTR CONTACTS

Emil Peña
Deputy Assistant Secretary
Office of Natural Gas and
Petroleum Technology
Office of Fossil Energy
U.S. Department of Energy
Telephone: (202) 586-5600
E-mail: *emil.pena@hq.doe.gov*

Guido DeHoratiis
Director, Upstream E&P and
Downstream Processing
Office of Natural Gas and
Petroleum Technology
Office of Fossil Energy
U.S. Department of Energy
Telephone: (202) 586-7296
E-mail: *guido.dehoratiis@hq.doe.gov*

Elena Subia Melchert
Office of Natural Gas and
Petroleum Technology
Office of Fossil Energy
U.S. Department of Energy
Telephone: (202) 586-5095
E-mail: *elena.melchert@hq.doe.gov*

Trudy Transtrum
Office of Natural Gas and
Petroleum Technology
Office of Fossil Energy
U.S. Department of Energy
Telephone: (202) 586-7253
E-mail: *trudy.transtrum@hq.doe.gov*

United States Department of Energy
1000 Independence Avenue, S.W.
Washington, D.C. 20585